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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,693	12/02/2003	Toshihiro Hayami	246076US2SP	1975

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
KACKAR, RAM N	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,693	HAYAMI ET AL.	
	Examiner	Art Unit	
	Ram N. Kackar	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 8-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 8-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-4, 6, 8-9 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art (AAPA) in view of Sugihara et al (JP 03072624) and further in view of Craig A. Phelps (US 5724234).

AAPA discloses a method of temperature measurement of a susceptor disposed in a conductive vessel of anodized aluminum set to ground potential and having a space formed therein in which a plasma is generated by application of a radio frequency power which in recent years have gone in frequency to 40 MHz, 60 MHz or 100 Mhz.

AAPA do not disclose the measurement of power of the susceptor by a radiation thermometer using infrared rays.

Sugihara et al disclose temperature measurement of a sample in a grounded chamber (Fig 2 and Fig 4) for treatment of a semiconductor substrate by an infrared thermometer (16) looking through an opening (15) in the chamber wall at the rear of the sample through a recess (19). Sugihara et al teach that accurate measurement is possible by this technique.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to use infrared thermometer for its accurate and reliable measurement of temperature.

AAPA as modified by Sugihara et al do not disclose any limitation on the size of the opening. However it is inherent that an opening made in the AAPA to allow an infrared radiation to pass also allows the possibility of RF leak.

Craig A. Phelps teaches that RF power leaks through openings of a size greater than the wavelength of the radio frequency and the leakage decreases linearly as the size of the opening decreases (Col 1 lines 60- Col 2 line 8). Craig A. Phelps further teach that the opening should be less than 1/20 of the wavelength.

It would be obvious therefore that at higher frequency the leak of an opening would increase and therefore at higher frequency smaller and smaller opening (less than 1/50 of the wavelength) will be preferable to prevent RF leak.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to use opening of as small a size as feasible in order to prevent RF leak through the opening.

3. Claims 5, 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art (AAPA) in view of Sugihara et al (JP 03072624) and Craig A. Phelps (US 5724234) as applied to claims 1-4, 6-9 and further in view of Shimamura et al (US 5707500) as evidenced by (Article in Publication, Sensors handbook by Sabrie Soloman -Copy right 1999).

Applicants admitted prior art (AAPA) in view of Sugihara et al and Craig A. Phelps is discussed above.

(AAPA) as in view of Sugihara et al and Craig A. Phelps do not disclose that the measuring portion of the susceptor is structured as a blackbody.

It is however known in the art through basic understanding of radiation thermometry that the infrared radiation energy emitted from heated surface is proportional to the emissivity of the surface and to T^4 where T is the temperature. Since emissivity of a black body is 1 it is obvious that signal for temperature measurement will have a better signal/noise ratio for a black body (See Article 84 specially 84.4).

Same teaching is echoed by Shimamura et al (Col 19 lines 34 to Col 20 line 65) who teach the use of making the inside of shielding cylinder as blackbody to reduce stray light (black body absorbs and does not reflect light).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to use the surfaces being looked at by radiation thermometer to be a blackbody in order to have high signal/noise ratio.

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants admitted prior art (AAPA) in view of Sugihara et al (JP 03072624) and Craig A. Phelps (US 5724234) as applied to claims 1-4, 6-9 and further in view of Bowers III et al.

Applicants admitted prior art (AAPA) in view of Sugihara et al and Craig A. Phelps as discussed above do not disclose that the measuring portion of the susceptor is structured as a blackbody, which is a black tape.

Bowers III et al teach that to measure the temperature of a surface by IR probe the surface should have a known emmissivity and since a black surface provided by a black tape will have an emmisivity of 1 temperature could be measured accurately (Col 8 lines 39-52).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to use black tape in the measurement hole for accurate measurement.

Response to Arguments

Applicant's arguments filed 2/21/2006 have been fully considered but they are not persuasive.

Applicant argues that in Sugihara instead of the substrate the temperature of a sample is measured.

The objective in Sugihara is to know the temperature of the substrate and the sample is determined to follow the temperature closely. This does not affect the general teaching of measurement of the surface from a hole in its rear.

Applicant further argues that Sugihara is silent about RF leakage. Applicant is engaged in attacking the references individually.

Unobviousness cannot be established by attacking the references individually when the rejection is based on a combination of references. *In re Novak* 16 USPQ 2d 2041, 2043 (Fed. Cir., BPAI 1989); *EWP Corp. v. Reliance Universal Inc.* 225 USPQ 20 (Fed. Cir. 1985); *In re Keller* 208 USPQ 871 (CCPA 1981); *Ex parte Varga* 189 USPQ 204 (PO BdPatApp 1973); *Ex parte Campbell* 172 USPQ 91 (PO BdPatApp 1971); *In re Scheckler* 168 USPQ 716 (CCPA 1971); *In re Young* 159 USPQ 725 (CCPA 1968); *In re Lyons* 150 USPQ 741 (CCPA 1966).

Further the leakage problem may only occur at very high frequency as taught by Craig A. Phelps and small holes as in Sugihara may not see any appreciable leak.

Applicant further argues that the opening in Phelps is not the same as in the claim.

It is noted here that one can infer from Phelps teaching that the hole should be as small as possible.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ram Kackar
Primary Examiner AU 1763